Komposition und Musikwissenschaft im Dialog V (2001-2004)

Mit Beiträgen von
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Kulturwissenschaftliches Forschungskolleg
MEDIEN UND KULTURELLE KOMMUNIKATION

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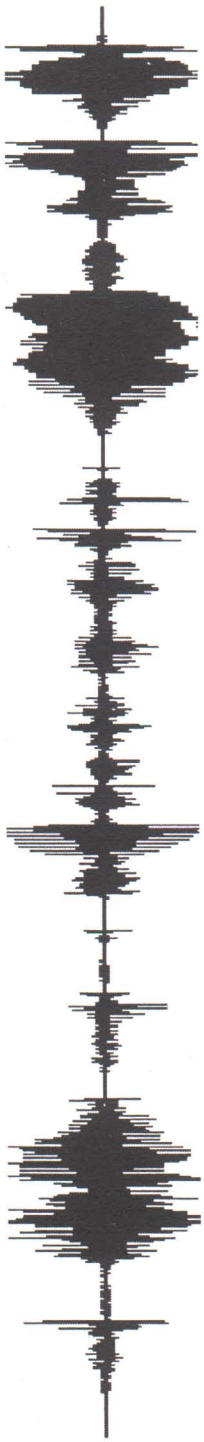


Musikwissenschaftliches Institut der Universität zu Köln
Musik der Gegenwart
Albertus-Magnus-Platz, Hauptgebäude

INSTITUT
FRANÇAIS
DE COLOGNE

Raum-Musik

Freitag, 7. Dezember 2001

Jean-Claude Eloy

16.15 Uhr, Vortrag:

From *Kâmakalâ* to *Shânti*

20.00 Uhr, Konzert:

***Shânti* (1972-73)**

Uraufführung der revidierten Fassung 2001

Ort: Musiksaal
Eintritt frei

Jean-Claude Eloy

From *Kâmakalâ* to *Shânti*

Vortrag mit Publikumsdiskussion und einer Aufführung von *Shânti* am 7. Dezember 2001*

I think we have a great privilege to be in the University of Cologne, a university which is putting so much effort towards the most living music, today's music, twentieth century music. And I thank Professor Christoph von Blumröder for inviting me. Not only inviting me, but inviting many composers that have come before, and so trying to bring to you – students, professors, public – as much living information as possible on today's music. It is very exceptional. I do not see any comparative program right now in any French university. So my country ought to follow this example on what is happening here.

It is always difficult to speak about one's own world, because there are always quantities of problems and complexities accumulated around it. But I shall try to give you some feelings about my aesthetical problems, and of course I shall speak about electro-acoustic music.

First I shall speak about my *Kâmakalâ*, which is a rather early work of mine (1971) for orchestra and chorus, in which I tried to express some of the problems I felt at this time in confrontation with what was then the modern music.

During this period, every time I went to a concert, I listened to pieces which could be interesting, but which were all very much characterized by a sort of rapid distribution of events in all kinds of directions. I remember some works, presented at the Concerts du Domaine Musical in Paris, in which the pianist, in a very short amount of time, had already covered the whole keyboard with tons of clusters and extreme rapid groups of notes. In a few seconds the pianist would have used all pitches, all frequencies, all intensities that a piano may produce.

So then: how do we 'renew' the information, once we have already given so much information about the piano, and in a few seconds? Then of course the piece had to be short! Because after ten minutes of distribution of statistic material in that way, there was not any clear direction undertaken, and one could not renew the musical content if continuing in such a way. So the piece had to find a quick ending, which in many cases appeared like the only exit. In fact, these endings were often like sorts of ways out.

My questioning came out when listening to non-western music. At that time I was listening very much to Indian classical music, and other civilisations' music, like Indonesian music, Persian music, etc. And I was struck by the contrast – with modern western music – that these types of music demonstrated, while they have only one modal-scale that does not move for the whole piece. And the musicians have this art of reserving progressively the dynamic of a piece for a long time.

In Indian classical music, when one starts a raga, one just begins with a tonic, and then, a few tones are added, little by little, step by step. Just the vague idea of a melody to come later. And only progressively the musician will unfold other aspects of the modal scale, of melodic intervals, of more or less underlined contours. Musicians permanently reserve the

* Uraufführung der digital revidierten Version 2001 unter der Klangregie von Jean-Claude Eloy; der Form- und Zeitplan der Aufführung ist im Anschluß an diesen Text auf S. 56 abgedruckt.

energy for later moments to come during the piece. I found that extremely great, extremely important, and I felt that modern music was missing a dimension of that nature, which allows to go to duration, which allows to go towards large moments of music, to develop and hold the time inside a music.

So, in my work *Kâmakalâ*, I tried – of course with the material, the vocabulary, the techniques of that time – to make use of such a type of 'global crescendo': a systematic and very long range crescendo applied to all the parameters of a piece.

This work uses a very large group. It is written for a large orchestra divided into three smaller rather symmetrical orchestras and a large chorus divided into four equal groups, plus a solo-chorus of 12 voices.

It uses three conductors. In the center, you have one conductor looking towards the audience, facing one orchestra and one chorus, their backs turned to the audience. On the left and right sides, you have again one conductor for each side, looking also towards the audience, while the orchestras and choruses have their backs turned to the audience, facing their conductors. The audience is surrounded by these three large groups: in front, on the left, on the right, like in a sort of triangle.

The three conductors can see each other, so they can either synchronize or desynchronize their beats, and remain dependent or become independent. With such a configuration in triangle, one has the possibility to develop three homogeneous masses of orchestras and choruses, either synchronized and using the same time-beats, or desynchronized, going in different time-scales, and thus with all the intermediary steps from very small, quasi non-perceived distances between masses to huge differences and resolute absence of common coordination.

Kâmakalâ starts with the smallest and most simple unit possible (see plate 1), which is one single sustained sound of a single singer (a bass-singer from the solo-chorus), who is situated in the middle of the space, at the front-center. He sings the lowest sound he can produce (of course at a nuance pp), with the longest breath, trying to stretch this sound to its maximum. It is written in the score with some special graphic symbols meaning: "push towards the lowest sound possible, stretch to the longest breath possible".

Then I ask two of the solo-singers (the two other basses) to join him and to try to do exactly the same, in synchronisation. But since human breath does not have exactly the same limits, and because human beings are not exactly the same, we get this very first little degree of differentiation: not the same breath and not the same low tones. Because if they push their limits, the three men are going to produce slightly different tones. And I ask them not to correct anything with their two other neighbours.

This is the very first extremely small step of differentiation between the 'one' and the 'many'. We will listen to the first example, so that you will understand what I mean. [Example: beginning of *Kâmakalâ*]

Then it goes on and repeats itself. As you may have noticed, the phonemes are organized in such a way that each prolonged repetitive sound is creating a full harmonic spectrum of slow transformation, from the closest position of the mouth ('m' closed) to the wide open position of an 'a'. This is representing 'the cycle of the manifestation'. We are heading towards the manifestation of the energy. If we would go in the contrary direction (from 'a' to closed 'm'), it would be the cycle of the 'resorption of energy'. The famous 'om': well known mantra used in all Hindu and Tibetan cultures.

Plate 1 / Figures 1-5 symbolically show the progression of the global generalized crescendo form of *Kâmakalâ*, as applied to all of its parameters.

Figure 1

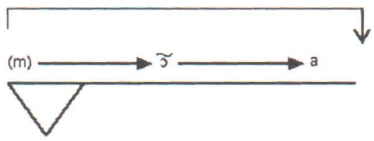


Figure 1 shows the original formula as written for a solo male voice: lowest possible sound, longest possible breath, continuous phonemic structure going from the closed 'm' until the fully opened 'a'. This must be understood as a symbol of the 'manifestation of energy' (the opened triangle). The 'resorption of energy' would be the reverse: from open 'a' to closed 'm' (like in the well-known Hindu and Buddhist mantra formula: 'om').

Figure 2

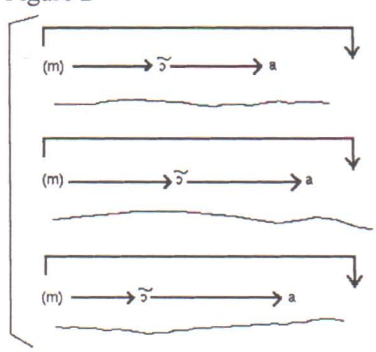


Figure 2 shows how the smallest degrees of multiplication (or fragmentation) grow naturally from three singers trying to sing the same formula simultaneously (differences of breath lengths, fluctuations of the lowest possible pitch, etc.). The original perfect unity is disturbed.

Figure 3

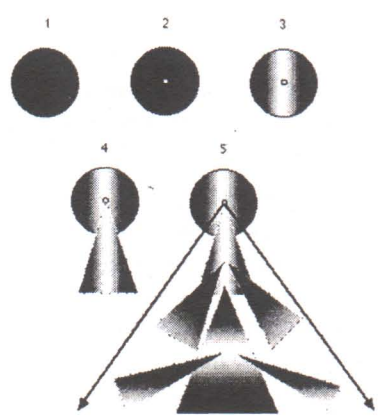


Figure 3 expresses the structural idea of the 'kâmakalâ' through five graphic figures: 1) original perfect unity; 2) appearance of the 'seed' of the first contradiction or difference; 3) manifestation of this difference (the dialectical dualism 'shiva – shakti'); 4) beginning of the fragmentation process (the 'kalâ's'); 5) multiplication of the 'kalâ's'.

Figure 4

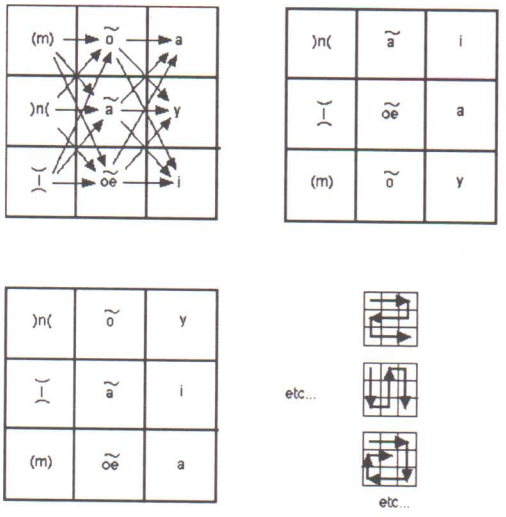


Figure 4 shows the multiplication of the phonemic structures as used inside the chorus parts (this was deduced from a Hindu practice called 'Pada's').

Figure 5

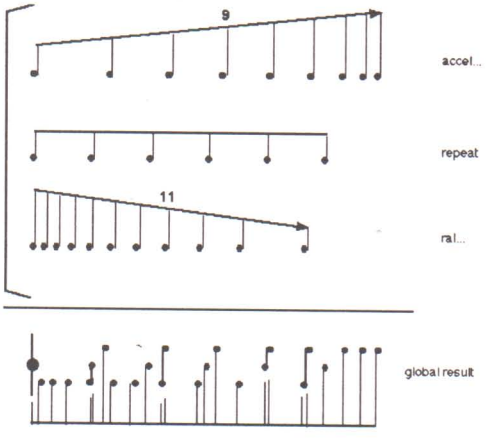


Figure 5 shows how what we call rhythmic complexity can grow out of the simple combination of a single repetitive pattern, progressively speeding-up or slowing-down, and superimposed (again an expression of the 'kâmakalâ' as a manifestation of energy, going step-by-step from unicity to multiplicity).

Later, on top of this repetitive mantra, I let the female voices enter with a very simple and balanced rhythm, which is itself infinitely repetitive. The full mantra is then entered, with its double aspect of masculine and feminine parts.

After this, the process is going on, and developing and enlarging more and more. But when researching a certain degree of transformation, I always look for the smallest degree, the 'epsilon of differentiation', from one degree of the process to the other. For example, at this moment, you have this sort of beat which is regularly established by the women's voices [sings]. Once this is very stable, once all the stratas of the mass of choruses are entered in the process, I ask – for example – the left conductor to slowly 'gain' (through the 'epsilon of accelerando') one single beat from the central conductor. And I ask the right conductor to slowly 'lose' (through the 'epsilon of rallentando') one beat towards the central conductor. Obviously, when following this process, there will be a moment where they are not going to be synchronized, followed by a moment at which they will all synchronize again, but one beat in advance for one of the conductors and its mass of performers, and one beat later for one other conductor and its other mass of performers. And later, I shall ask them to gain two beats and lose two beats, etc. So the three masses begin, alternatively, to float and re-stabilize each other. With that process, one is going to have the beginning of some fluctuation between phases of synchronization and de-synchronization of the whole mass.

Much later will come a new step concerning rhythm. It starts with the entry of a big wood drum. The simplest rhythm which can be invented is a pure and very slow repetition of one single stroke: 'bong'.....; 'bong'..... And then it very slowly accelerates. But again I ask the percussionist: "Accelerate with the epsilon of differentiation, following the slowest possible curve of accelerando".

Here I must remark something on performers from the Eastern and the Western cultures. That was quite funny, but revealing and meaningful. If you ask percussionists from western orchestras to make a slow accelerando, they will play several accelerating strokes which will make a few seconds of global duration [sings seven rapidly accelerating tones]. If you ask the same to a Japanese drummer, he will do that for minutes and minutes. A Buddhist priest could do it perhaps in the proportion of half an hour, and half an hour later he would be a little bit quicker than at the beginning. The mentalities, perceptions and trainings are not the same. We will listen to an example of this entry of the first strikes. [Example]

This process is going to develop again, and we reach a moment where I begin to combine accelerandi and rallentandi with several skin-drums. Rhythms (complex rhythms) are going to be born out of the intercrossing of accelerandi and rallentandi. And they will have varying curves: long accelerandi, short and quick accelerandi, middle ralentandi, etc. If you superimpose all of them on a graphic, the mixture and result of all these differences and intercrossed durations are going to produce more and more complex varied figures. That is how complexity is born out of a single development of simplicity.

Up until now and from the beginning of this work, you can feel that there is hardly any pitch. We are in a world where there are no real pitches. Words and vocal formulas are spoken and sung in a world of statistic unprecise frequencies. We are now already after the first 15 minutes of the piece. So I wanted the next step of the progression to be the first

sound-pitch of the piece (meaning: the first precise and organic frequency of this piece). And for me, the first pitch of this piece had to be something important. This was in opposition to all those pieces about which I spoke at the beginning of this lecture, which I was listening too often at the concerts at this time and which distributed so many pitches, so quickly. I wanted the first pitch of a work (this work) to be an exceptional event. That is why this first clear written pitch comes later, after a long phase which is a sort of preparation. What we had until now is a 15 minutes preparation of the first pitch to come!

You can hear a c-sharp which begins in the low register of the alti and then is joined by some wood and brass instruments, etc. and finally the choruses. So, the c-sharp is going to be the first sound of the piece, a general focus: in fact, the first actual tuned frequency.

Then a triangle-form begins to develop, which is the constitutive form of the piece (see plate 2). *Kâmakalâ*, in Sanskrit, can be translated by the 'triangle of the energies'. The c-sharp goes to d and then to c-natural, and from that it will go in contrary directions, in that way up and that way down – to the infinite: c-sharp, d (up), c-natural (down), e-flat (up), b (down), e-natural (up), b-flat (down), f (up), a, etc. So it could extend and extend until all the possibilities of frequencies of an orchestra and chorus are completely covered. And that is connected again to the title of the piece itself: 'Kâmakalâ' is a Sanskrit word, where 'Kâma' is the God of love, and 'Kalâ' are the subdivisions of his energy, when entering into its phase of manifestation, when his energy is becoming active.

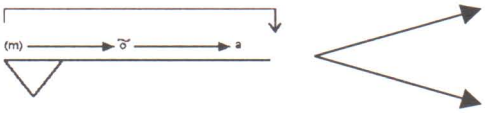
Hindus have a certain cosmology-concept, which represents the cosmos like many huge cycles of evolution, which follow each other. And generally, each cycle begins and ends in an infinite moment inside which everything is kept in a whole unit. Shiva is totally undivided. It is the equivalent to what our sciences today call 'before the big bang'. All the energy is concentrated in one single point. And so, Shiva can be represented by a simple point, or, if you prefer, a circle. But this circle is a unit, something without division. Then comes the energy of the divine love. Love in India is like the energy of the universe. Shiva's power exists in its unity with its female counterpart included completely in himself. This feminine part is called the 'Shakti', and it is the energy. Without the Shakti-power, the God is nothing, and cannot become anything.

And because of this fundamental double unity, erotic desire means a contradictory energy between the two united parts, which divide this unity at one moment. So there comes a moment at which the fundamental unity is divided into two – 'Shiva' and 'Shakti'. And from that first division, more divisions will come. Kâmakalâ is that multiplying process of the subdivisions of Shiva. It means that from one original unit, and because of the divine love energy is conceived as a cosmic erotic desire, there will be a first subdivision and progressively more and more subdivisions: and that will create all the worlds, all the diversity of the worlds. This is going to become the famous dance of Shiva, always represented with his numerous arms.

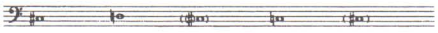
It is very close to the cosmology concepts which scientists use today to explain the universe. Before the big-bang, there exists something, a unity which implies all the future development of matter, light and time. And nevertheless, physicists and cosmologists are not yet capable to fully and clearly conceive the inner constitution of this infinitely small primordial unity... And then comes this original explosion, the big-bang, which is more and more verified as a concept, and leads the cosmos to the constitution of matter, step by

Plate 2 / Figure 6 (A to E) gives the harmonic structure of the whole piece (from minute 0' to minute 32' or thereabouts – depending on the performance).

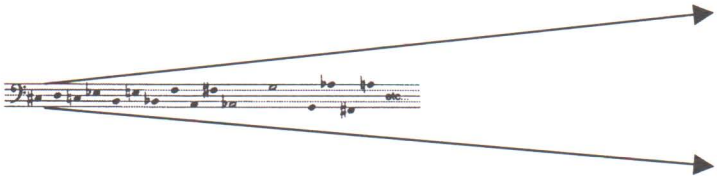
A – (at 0')



B – (at about 15')

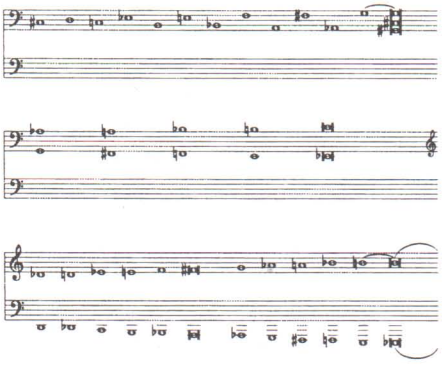


C – (at about 18')

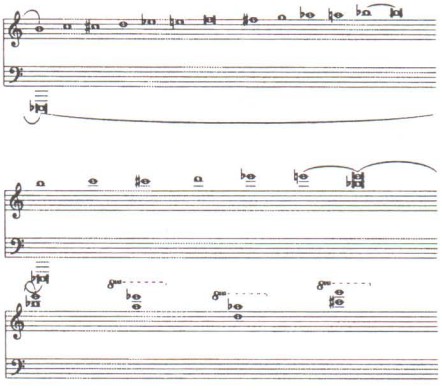


D – (at about 25')

C1) – C2) – C3)

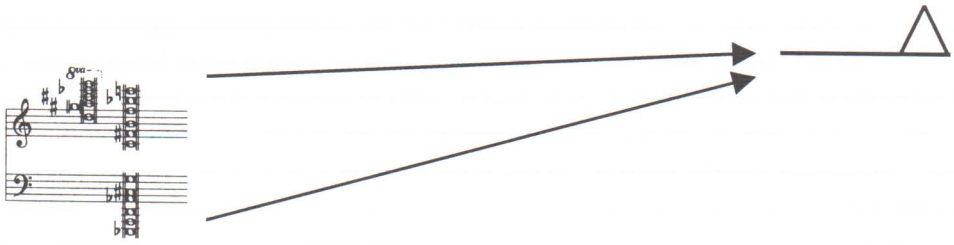


C4) – C5) – C6)



D – (at about 25')

E – (at about 32')



Explanations:

A is the beginning (the first formula), developing from the solo voice to the tutti of the five choruses, without fixed pitch.

B is the first pitch (C#), introduced progressively from the alti of the orchestra to the tutti of the choruses and orchestra groups, turning around chromatically with one step up and one step down (unity towards multiplicity).

C is the chromatic contrary movement at its beginning.

C1)-2)-3)-4)-5)-6) show the progressive steps of the chromatic enlargement of harmonic fields. At the end of each of the six lines, there is a pause in the development of the tutti, momentarily maintaining the whole writing of the tutti inside the limits of this step.

D) is the symbol of all the energies when fully deployed: all the pitches available in the orchestra, from the lowest tone to the highest one.

E) is the exact opposite symbol from the beginning: the highest possible tone obtained by the violins, at the end of the piece.

step, more and more complex aggregations of atoms, and blocks of atoms, and stars, and the lighting of stars by the pressure of agglomerated matter, and in parallel to this evolution, the creation of time. For time exists only because of the existence of matter. Without matter, physicists believe that there cannot be time.

To come back to *Kâmakalâ*, you will have, for the full global form, an energy going this way, an energy going that other way, and then developing in full. This is the principle of the piece. So, at a much later moment of the piece, I give a last example. You will hear a part of this final moment during which the three orchestras and masses of choruses with their three conductors are completely separated and they go their own ways independently (see next pages, plate 3). There is a big global texture, very large, and it is complex enough so that the three big layers of materials can be superimposed freely without contradictions. It is grounded on a very massive sort of heterophony. It is useful to listen to it, so as to have an idea of the shape of the piece. [Example]

At this period, I was often searching in my compositions to use some types of big blocks of sounds, which could achieve a very long duration. And of course when you give some big clusters to an orchestra, to a mass of strings for example, with a lot of sustained sounds, it is a little bit boring and tiring for their muscles to do like that, and sustain, sustain... So then you will enter into the problems of the performance in a hall, facing an audience. This piece is performed by orchestra's musicians who are used to performing by showing virtuosity. Using musicians for another function, which is a sort of neutral function inside the mass, will lead them to feel sometimes somewhat frustrated. They may refuse and then you have an orchestra which rebels. This recording was made at the WDR in 1975 and the orchestra was very proper, the chorus was very good. But I had performances in Brussels and in Paris, during which the orchestras were showing quite a lot of hostility. In Brussels, for *Kâmakalâ*, in the middle of the piece, during a rehearsal, they went on strike.

So I felt rather uncomfortable for the fact that the visual situation could sometimes destroy so much whatever you want to do and imagine freely, when you are in a dream for music... It is a problem, and it is still a problem in these days. I think of people criticizing electro-acoustic music and saying: "This music from the speakers is not a 'living' music. It is ready-made, on tapes. So that it is not music making and performing. That is not a concert. And you darken the room because there is nothing to see. What is that ?" Well, my answer is: there is nothing to see, because there is something to hear! There is even much to hear! And that is what we are meant to be as musicians.

When I observe the usual concert-situation, where the conductor comes in with his black jacket, and the piece must not be longer than 20 minutes, otherwise it would be very difficult to put it in a program, etc. All of that is so conformist! The concert is not truly a show, an actual show, in which someone would create and take responsibility for the show itself. It is somehow a show, but it is a functional show, which is working with an admitted size, a preconceived format. It is always the same ceremony. And when, for example in France, it is loudly spoken that we must return to the symphonic orchestras, return to the operas and forget about the electro-acoustic music: I think this is a great mistake. Because modern music is putting on some old jacket and is again putting itself in places where new ideas, new time concepts have difficulties to manifest themselves. I still believe in electro-

Plate 3 / Figures 7-9

Figure 7

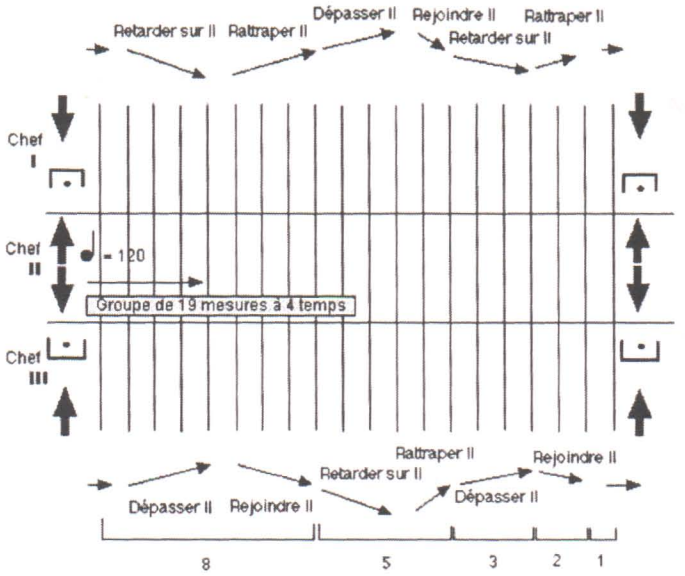


Figure 7 shows how the three conductors gradually manage their separation: from unity (same tempo, absolute synchronisation) to multiplicity (divergencies of accelerandi and rallentandi, with reunifications at precise points, until they separate once and for all during the last third of the piece and become three different independent layers).

Figure 8

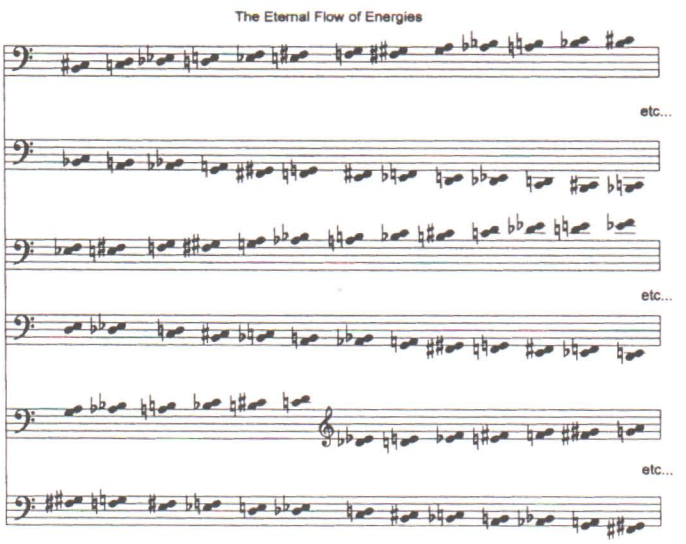


Figure 8 shows the details of the chromatic contrary motion (expressed earlier in Plate 2 / C and C1): full vertical chromatic totality at every step of the continuous chromatic contrary motion. This figure could develop out of the ranges of human perception to infinity; thus its given name: "The Eternal Flow of Energies".

Figure 9

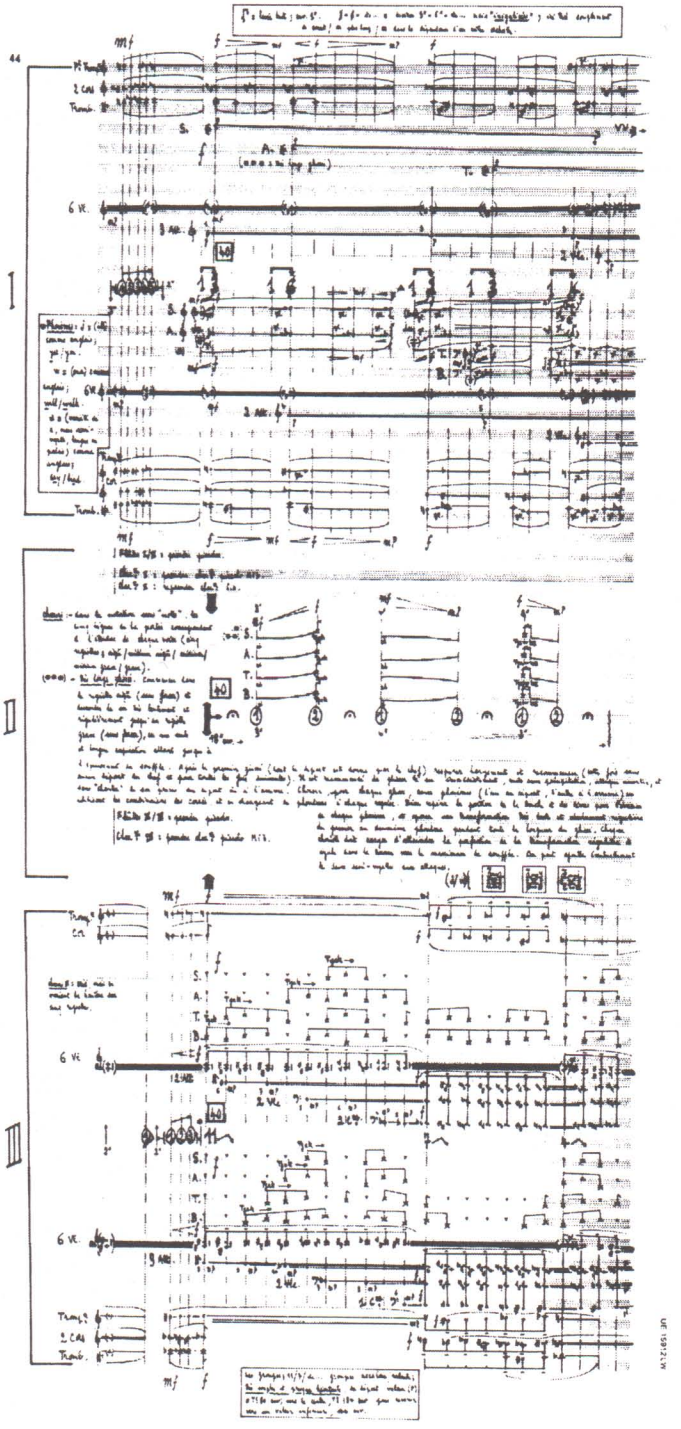


Figure 9 – page 44 from the original manuscript of *Kâmakalâ* (©Universal Edition – ue 15912f) – gives an idea of the thickness of the score's writing.

acoustic music, whether we do it as it comes from a studio, or maybe with more live electronic. Now that we have many computers, we can certainly do a new type of electro-acoustic music. But anyway, I persist in thinking that it is the only way to find new concepts, new situations, new proportions, new time-feelings for concert making.

For example: last Wednesday, in Grenoble, I did a concert with another piece of mine – *Gaku-no-Michi*. It is a piece which I realized at an electro-acoustic studio in Tokyo five years after *Shânti*. It is the double-size of *Shânti*: more than four hours of electro-acoustic music – so it is a big concert. When the people come to such a concert, we set up a situation, where they can lie on the floor. They can bring their blankets and whatever they like and put themselves in a very comfortable situation. It is not at all the idea to putting them on the floor and taking drugs, for all of those kinds of false and journalistic clichés. It is the idea to be comfortable, to listen for a very large experience of time. And there is no reason to refuse ourselves that experience. There is no reason to remain in the proportions of a usual concert. Electro-acoustics allow that other experience, it allows to go very far.

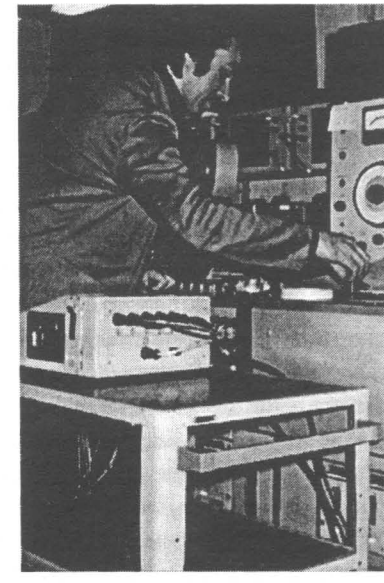
Also, if I work in a studio with all my sounds, I have not to care anymore about the musicians who might protest or get frustrated because they do not show enough of their virtuosity. Sounds, in a studio, are neutral. They do not protest. They are sounds. And I can do whatever I want to do with these sounds. There is not a leader of a union, who is going to stand up and protest for any kind of reason and will call for a strike. Sounds do not strike.

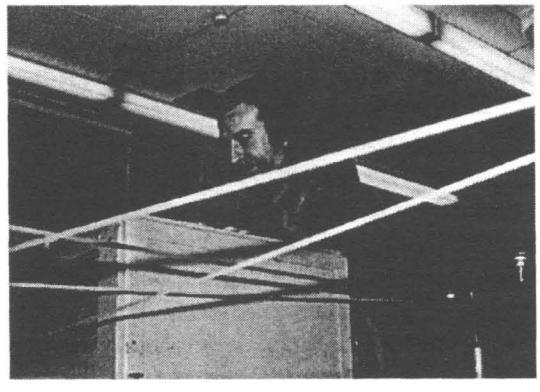
Let us speak a little bit about electronic music. With electronic sound you have a constant 'feeding' of the sound. You can have a sustained sound as long as you want, which is a little bit like 'yoga-music' in the past. The only comparison I can find is yoga-music, so that you can generate a sound without the necessity either of breathing for human voice or stopping because your muscles are tired, or anything like that. The energy is limitless. The energy of the electronic source, of a tape recorder, of a big enough type of memory is practically without end. An oscillator never tires of generating a sound as long as you want. That allows to have longer sounds, longer materials, longer treatments of materials, longer experiences.

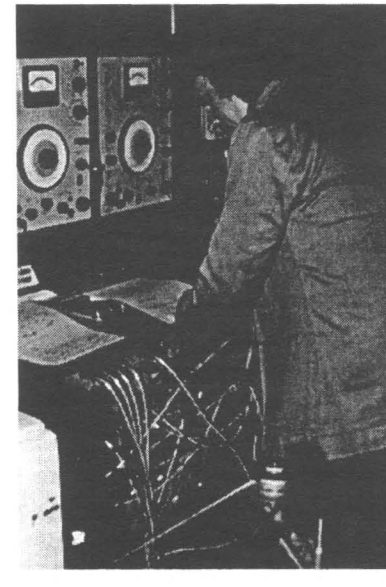
This is exactly what I experienced when I came for the first time, in 1972, to the Electronic Studio of the WDR, where I produced *Shânti* (see plate 4). *Shânti* was my first electronic production. Before that I had no facility for doing electro-acoustic music. I knew Stockhausen already for many years, and he knew about my desire to compose in the electro-acoustic field, to create something in that direction: so he invited me to come to the WDR Studio for a production. When I came to the studio I was rather ignorant of the practices and I thought: I shall do a small little study and will remain modest in my program.

I had the chance to meet in the Studio a sound-engineer who is here tonight: Volker Müller. I can say that he was my only true 'teacher' of electronic music, in my whole life. For me it was great good fortune. And I am happy to be able to express this to him tonight. It was a great opportunity, because his approach to sound is extremely free and personal. He liked to experiment with sounds. All kinds of sounds. He was not working with any preconceived idea, any preformatted philosophy or dogma: he liked to search for the infinity of the possible sounds... No censorship. Let us try to connect this machine with that one; let us try to modulate this by this; etc. "And could we, Mr. Müller, plug this output to this input and modulate here and see what would be the result?" – "Of course, let us try it". We

Plate 4 / Figures 10-14: Jean-Claude Eloy working on the production of *Shânti* at the Electronic Music Studio of the WDR in Cologne (photos © by Volker Müller).







worked together eight days in the studio as a preparatory session, before the start of the production. So I got quickly an understanding of what the machines could do. And if you turn this button, it is producing that and you can hear it, and now trying to connect with that, you can hear the difference, etc... And being my teacher for eight days, Volker Müller gave me freedom to do whatever I liked, whatever I wanted to do. So I thank you Volker, this evening, because that was a very free, very non-dogmatic, very pragmatic introduction to electro-acoustic music. A direct and concrete introduction, which I appreciated a lot. It is probably the reason for this large freedom which the young electro-acoustic people of today, whether in America or in China, are recognizing about all my electro-acoustic production of this period: *Shânti* and *Gaku-no-Michi*.

Of course, technologies of this time were different than what they are today. But these old analog techniques were nevertheless very interesting, because efficient! Big multi-track tape recorders, transposers, generators, modulators, filters... Filtering gave me the idea of trying to have material which is filtered by the same filter many times. And this is why I came to the use of many tape-loops. In order to obtain more complexity, polyphonies of different actions, I began to multiply the number of loops inside the studio. I needed many loops: short loops, long loops, medium-sized loops. Sometimes, when large tape-loops were installed all over the studio, passing on top of each other, I had to pass low on the floor and under them, in order to reach some other machines.

For example, I was using very concrete materials: mass slogans, crowd shouting in rhythms in the streets, for protesting. All of these slogans have specific well characterized rhythms. It is a noisy nature of sound. If you send it one time in a filter, it will be slightly colored. If it is re-recorded and passes, with the help of the loop, a second time through the same filter, it will be filtered a little bit more, in the same shape of the filter. And if you pass it ten times, twenty times, then the pure resonance of the filter is going to get out of it, with more or less of the original rhythm inscribed into the material, but becoming more and more a pure frequency. But a pure frequency with an inner agitation, which is remembering more or less the original traces and print of the material.

I found that very interesting at that time, because it changed the signification of a sound. If you have a violent sound, like shouting and protesting in the streets, and you end up, after a certain process, with a pure frequency, but nevertheless keeping a trace, a souvenir, a memory – imprint in it – of its origin: the signification, the meaning of this sound is exactly the contrary at both extremes. It is a metamorphosis, and that metamorphosis is due to the power of the electronic circuits.You have a big crowd protest with anger becoming a pure angel voice! I used those processes in the first part of *Shânti*, where the slogans are progressively transformed into harmonic voices.

Much later, in Tokyo, for *Gaku-no-Michi*, I used many sounds from the subways: the door 'clacking', the rings before taking it, etc. After recording them alive, I took these sounds back to the studio to transform them. Some of them became very meditative sounds, very pure sounds. You can hardly identify the origin. So I liked to work from concrete to abstract, from abstract to concrete, to transform a sound which is generated only by electronic sources into something which looks like concrete – but in fact is not –, and also play with all the degrees of interpretation that we can have. And on the other hand, to lose progressively the possibilities of identifications of a concrete object, so that it becomes abstract

– just a sound, but you have no possibilities of recognition anymore. This is quite surrealistic: like a surrealistic way to sounds.

What I can say specifically about *Shânti* is that I discovered the properties of time which are included inside the practice of electro-acoustic materials when listening to a very big pack of sounds. With electronics we can produce sounds that are very compact – full of frequencies, so that you listen to a whole block. It is not anymore a note or a pitch or a sequence, but it is a whole block-texture.

We were working with one of the assistants, and I was deciding to record one of these sounds which I liked particularly: "Let's keep two or three minutes of it, as material..." And so I listened to the sound while the tape-recorder was working. I listened, listened... And then I looked at the watch in front of me in order to stop the recording of two or three minutes... and saw that already twelve minutes had passed! I did not understand, because I had the impression that only two or three minutes had passed. This meant that 'something' was happening, in the mechanisms of the perception, facing that type of sound, which concentrated my consciousness into that sound, deeply. It was because that sound was 'heavy', as an acoustic body. It was rich in instantaneous information, somehow. And so it would integrate and ask for much of my attention to it. I thought those sounds were sorts of 'meditation' sounds. You have several of them in *Shânti*. But there is one particularly at the end of the first part: a sort of 'Asian-monk' sound – a low sound. I kept it that way.

Facing such a type of sound, we just try to listen, to integrate ourselves into this sound. And there is nothing to see. No one is in front of us, suffering for an action to produce this low sustained infinite sound. Such type of material is changing both the perceptions and the proportions of music. We cannot work with such material in the same way as we work with the sound of a piano, which is made of an attack followed by a natural decay. So the types of articulations, relations from sound to sound, and so the construction, the vocabulary, the grammar are going to change completely!

And finally the aesthetic is obliged to transform it. We cannot avoid this confrontation. This is one of the problems we have. I was a student of Boulez and I remember, at the academy of music in Basel, when we were his students, we were talking a little bit about electronic music. He said: "Well, do not waste your time with electro-acoustic music, because machines are so imperfect. Only when we have the use of computers will we be satisfied".

He tried a small piece in the musique concrète-laboratory which I listened to carefully. For me there is some kind of mistake in that, because he tried to apply serial techniques, which are like pitch techniques, little sounds following each other, while the initial material is already quite complex and would need more time, another type of aesthetic and grammar, in order to be perceived and understood. One cannot treat a concrete object (which needs a span of time to be understood as an object) like one would treat pitches and tones. It is impossible. This is a fundamental mistake which I think is still going on these days in some of the modern music. Electro-acoustic music is new material which needs another approach of time, another approach of form and construction.

Much later after this period, I returned to performance-music, with live performers: instrumentalists, vocalists. I did not produce only studio music. And I got interested in non-western music, I got interested to work with musicians coming from other traditions. I had good relations with Japan and went there often. I met some musicians and asked them if

they would like to work with me. In 1987, I met in Tokyo a young Japanese girl who was learning monk-singing ("Shômyô"). These monks were my friends and had been participating before in two important works of mine, as soloist-performers: *A l'Approche du Feu Méditant* for Gagaku orchestra and two choruses of Buddhist-monks, and *Anâhata* for three soloists of the Gagaku, two voices of monks, percussion and electro-acoustics. These monks were very open-minded, and in Japan, they were trying to transmit their knowledge to a group of young women.

One of these women had a very exceptional interesting voice, that was very low. This young woman was also a performer of Satsuma-Biwa, a plucked string instrument. She later came to live in Europe with her husband, a Dutch flutist. She was the typical young Japanese who is both traditional and modern, and explores the western world, while appreciating the value of her own traditional world. For that reason we could find a good ground for a cooperation.

When I was offered to come again to the WDR studio in 1990, the studio had changed, if I compare it to the period of *Shânti*, in the 1970s. Computers, Midi instruments, digital processing combined with the older analog tools: all this network of tools from different generations was rich and interesting. I asked this woman to come to the studio in order to sample her voice and her instruments. She spent two days there, singing upon my request all types of things: pitches, little formulas, glissandi, attacks, sustained sounds, etc. I even made her record with her voice a full quarter tones scale (piloted in her ears by a Yamaha synthesizer, for exact control of intonation).

Later, I used all these wide sampling-material to compose my new work. We fed the Fairlight sampler, controlled it with an Atari computer, invented all kinds of circuits with feedbacks (again, like in *Shânti*), but this time the feedbacks were not with tapes but with connections. We made different feedbacks with an EMS Vocoder on itself. Also with an Atari computer and its 'Midi through' parameter, on its Midi 'out' and 'in' passing through the Fairlight system, etc. All of that entered inside my piece *Erkos*. I suggest we listen to a part of it later. For me, in that work the studio is used as a sort of a big multiplicator of one source. And a human being is the source. Of course, she sings and performs inside the piece some live parts. Then all the electro-acoustic elaborations become like a big enlargement of that living source. So I made 'orchestras' out of her instrument sounds, 'choruses', masses of choruses, out of her voice, and that is precisely the part which I suggest we listen to now.

At the beginning, she sings alone, in the low register. She repeats several patterns, a little bit like mantras, but more varied and melodically evolutive. Then, progressively, enters one voice behind her, on the tapes, which is her own voice, introducing a sort of counterpoint at two voices. Then the voices are going to be modulated and multiplied by two, three, five, etc. And progressively, step-by-step (somehow in the same spirit as my *Kâmakalâ*), hundreds of singers are going to enter, all coming out from the same source, from the same voice. She is sort of multiplied. The Sanskrit text is speaking about the Goddess. The Great Goddess with her thousands of faces, multiplying herself in all her aspects: her bad aspects and good aspects, both. This part of the piece symbolizes this multiplication of one single personality. Maybe we can listen to a part of that piece now, and then talk. *Erkos* is made of five parts, and this chorus part is the final part. [Example]

We decided that it might be useful to have a sort of exchange of ideas, to have a discussion, because I am sure you will have a lot of questions. Not only about my music, but